



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/820,639	04/07/2004	Judith Manco	PES-0102	8483

23462 7590 09/28/2005

CANTOR COLBURN, LLP  
55 GRIFFIN ROAD SOUTH  
BLOOMFIELD, CT 06002

EXAMINER

HAILEY, PATRICIA L

ART UNIT	PAPER NUMBER
----------	--------------

1755

DATE MAILED: 09/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/820,639	MANCO ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Patricia L. Hailey	1755	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 12 July 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) 11-21 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 July 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)               | Paper No(s)/Mail Date. _____  |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>04/07/04</u> .  | 6) <input type="checkbox"/> Other: _____                                    |

u

*Election/Restrictions.*

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
  - I. Claims 1-10, drawn to a method of making an electrode decal, classified in class 502, subclass 101.
  - II. Claims 11-21, drawn to a method of making a membrane electrode assembly, classified in class 429, subclass 30.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions I and II are related as combination and subcombination. Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP § 806.05(c)). In the instant case, the combination as claimed does not require the particulars of the subcombination as claimed because the combination (Invention II) does not require that the drying of the catalyst ink form an electrode layer; claim 11 requires and recited that drying of the catalyst ink forms an electrode. The subcombination has separate utility such as a multi-functional catalyst (e.g., various hydrocarbon conversion processes – reforming, cracking, etc.,).
3. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

4. During a telephone conversation with Pamela Curbelo on September 16, 2005, a provisional election was made with traverse to prosecute the invention of Group I, claims 1-10. Affirmation of this election must be made by applicant in replying to this Office action. Claims 11-21 are hereby withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.
5. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

#### *Claim Objections*

6. *Claims 6 and 7 are objected to because of the following informalities:*

Claim 6 is objected to because it appears that the limitation "isn-propyl acetate" should be "is n-propyl acetate".

Claim 7 has two periods at its end.

Appropriate correction is required.

#### *Claim Rejections - 35 USC § 112*

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. *Claim 8 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.*

Claim 8 lacks antecedent basis for the phrase "catalyst component". It appears that this limitation was meant to be "catalyst compound", as recited in claim 1.

***Claim Rejections - 35 USC § 102***

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. *Claims 1-10 are rejected under 35 U.S.C. 102(b) as being anticipated by Hitomi et al. (U. S. Patent No. 6,492,295).*

Hitomi et al. teach an electrode obtained by a process comprising applying to a porous electro-conductive substrate a film produced by dispersing a catalyst composite into a dispersion medium, and drying the resulting film. See col. 10, lines 33-51 of Hitomi et al. (considered to read upon claim 1).

The catalyst composite comprises catalyst particles (such as those of platinum, palladium, rhodium ruthenium, iridium, or osmium, or alloys thereof, as well as carbon

particles supporting said catalyst metals, see col. 6, lines 11-23 of Hitomi et al.; considered to read upon **claim 10**), a cation-exchange resin (e.g., perfluorocarbon sulfonic acid type ion-exchange resins—considered to read upon “perfluorinated sulfonyl fluoride polymer”), and a hydrophobic polymer (e.g., polyvinyl alcohol). See col. 6, lines 11-45 of Hitomi et al. (considered to read upon **claim 4**).

The proportion by weight of the cation-exchange polymer to the catalyst particles is not particularly limited, but is preferably from 1.0 to 100 wt. %. See col. 6, line 62 to col. 7, line 6 of Hitomi et al. Further, with respect to the hydrophobic polymer, the proportion thereof to the catalyst particles is preferably from 0.01 to 30 wt. %. See col. 7, lines 33-35 of Hitomi et al. (considered to read upon **claim 5**).

To prepare the catalyst composite, the hydrophobic polymer or cation-exchange resin is dissolved in a solvent, and this solution is adhered to the surface of the catalyst particles via immersion. See col. 7, line 65 to col. 8, line 46 of Hitomi et al. Next, the solvent is removed via phase separation, or by addition of a solution that is insoluble for the hydrophobic polymer or cation-exchange resin; exemplary solutions include propyl acetate. See col. 9, lines 5-26 of Hitomi et al. (considered to read upon **claims 2, 3, and 6**).

Example 1 of Hitomi et al. disclose the employment of catalyst particles comprising platinum having an average particle diameter of 2.4 nm, supported by carbon particles having an average diameter of 30 nm; see col. 11, lines 28-30 of Hitomi et al. (considered to read upon **claims 8 and 9**).

Because Hitomi et al. disclose the components recited as comprising Applicants' claimed "catalyst ink", as discussed above, the claim limitation regarding the density thereof (**claim 7**) is considered inherently encompassed by the catalyst composite of Hitomi et al.

In view of these teachings, Hitomi et al. anticipate claims 1-10.

**11. Claims 1-3, 7, 8, and 10 are rejected under 35 U.S.C. 102(b) as being anticipated by Uchida et al. (U. S. Patent Application Publication No. 2002/0182478).**

Uchida et al. disclose a method for producing an electrode, wherein a catalyst ink is prepared by dispersing carbon particles supporting a noble metal catalyst in an organic solvent, mixing said dispersion with an alcohol dispersion of polymer electrolyte, mixing these two dispersions to prepare a catalyst ink, forming a catalyst layer from said ink, and applying the catalyst layer to a gas diffusion layer (considered to read upon the limitation "decal") to produce an electrode. See paragraphs [0039]-[0047] of Uchida et al., as well as the Examples, which depict the application of pressure to said electrodes at a temperature of 150°C (e.g., paragraph [0097]; considered to read upon the limitation "drying the catalyst ink", and thereby reading upon **claim 1**).

Examples of the noble metal catalyst include Pt and a binary catalyst of Pt-Ru (considered to read upon the limitation "catalyst compound" and upon **claim 10**); examples of the solvent include butyl acetate, but solvent such as propyl acetate may also be used (considered to read upon the limitation "ester", as well as **claims 2 and 3**).

Art Unit: 1755

Additionally, examples of the polymer electrolyte include a "5% Nafion solution" (considered to read upon the limitation "perfluorinated sulfonyl fluoride polymer").

See paragraphs [0053]-[0055] and [0067] of Uchida et al.

The catalyst-supporting carbon particles are desired to have a particle size distribution within a median diameter range of 0.1 to 3 micrometers (100-3000 nm). See paragraphs [0083]-[0084] of Uchida et al. (considered to read upon **claim 8**).

Because Uchida et al. teach the production of a catalyst ink having the same components as those recited in the instant claims, the catalyst ink of Uchida et al. is considered to inherently exhibit the density recited in **claim 7**.

In view of these teachings, Uchida et al. anticipate claims 1-3, 7, 8, and 10.

#### *Conclusion*

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patricia L. Hailey whose telephone number is (571) 272-1369. The examiner can normally be reached on Mondays-Fridays.

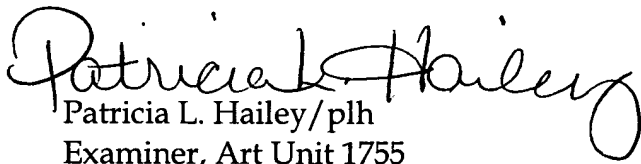
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jerry Lorengo, can be reached on (571) 272-1233. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

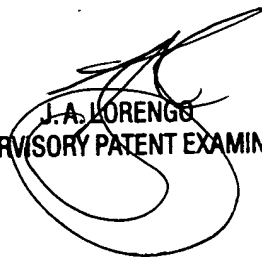


Art Unit: 1755

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group 1700 Receptionist, whose telephone number is (571) 272-1700.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Patricia L. Hailey/plh  
Examiner, Art Unit 1755  
September 26, 2005

  
J.A. LORENCO  
SUPERVISORY PATENT EXAMINER